

Remarks

A Power of Attorney by Assignee was filed in this case with the United States Patent and Trademark Office on May 20, 2002 appointing the practitioners at Customer Number 25213 as attorneys and agents to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith. A copy of the same is enclosed for the Examiner's convenience. Acknowledgement of this power is requested.

With this amendment, the specification stands amended to claim priority to the parent application. Accordingly, Applicants submit that the application is in compliance with the conditions for receiving the benefit of an earlier filing date under 35 U.S.C. § 120.

The amendments to claims 1, 8, 9 and 16 find support in the specification, for example, at page 3, lines 18-23 and at page 4, lines 14-19. No new matter is introduced by way of the amendments.

Claims 1-16 are pending in the application, and claims 1-16 stand rejected. Claims 1-3, 6, 7, 9-11, 13 and 14 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Baselt (U.S. Patent 5,981,297). Claims 4, 8, 12, and 16 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Baselt in view of Kausch (U.S. Patent 5,665,582). Claims 5 and 13 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Baselt in view of Roelant (U.S. Patent 6,001,573). Claims 1, 2, 4, 6-10, 12, and 14-16 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Kausch. Applicants respectfully traverse these rejections, and submit that the present claims are not anticipated and are not obvious in view of the prior art.

The Rejections of Claims 1-3, 6, 7, 9-11, 13 and 14 under 35 U.S.C. § 102(e)

Claims 1-3, 6, 7, 9-11, 13 and 14 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Baselt (U.S. Patent 5,981,297). Baselt is presented by the Examiner as discussing a method of nucleic acid hybridization comprising attaching probe nucleic acid molecules of known sequence to a solid support; labeling nucleic acid target molecules with paramagnetic labels; contacting the labeled target molecules with the solid support; activating a magnetic field whereby the labeled molecules are attracted to the solid support (citing column 7, lines 21-37 in support of this statement); washing the support and inverting the polarity of the magnetic field to remove any unbound or non-specifically-bound molecules; and detecting the hybridized target nucleic acid molecules, wherein the method operates faster than other techniques.

Anticipation under 35 U.S.C. § 102(e) requires that “every element of the claimed invention be identically shown in a single reference.” (*In re Bond*, 910 F.2d 831,832 (Fed. Cir. 1990)).

As amended, claims 1-3, 6, 7, 9-11, 13 and 14 recite “attracting said labeled nucleic acid target molecules to the solid support by activating a magnetic field effective to induce rapid migration of said labeled nucleic acid target molecules” and “hybridizing the labeled nucleic acid target molecules with their complementary pairs at a hybridization rate greater than the hybridization rate in the absence of said attracting by said magnetic field.” Baselt lacks at least these steps, and so does not anticipate the pending claims.

Applicants respectfully draw the Examiner’s attention to a discussion in Baselt (at column 7, lines 21-37) of beads in a magnetic field, in which no discussion or suggestion that labeled molecules are attracted to a solid support may be found. However, Baselt discusses the detection of magnetically labeled particles after they have been attached. For example, Baselt states: “Magnetizable label particles are used having binding molecules capable of undergoing a selective binding interaction with either the target

molecular species or the sensor bound binding molecules so that the label particles are attached to the magnetic field sensors. Magnetizing means are provided for magnetizing the attached label particles and detection means are used for monitoring the magnetic field sensors so as to detect the magnetic field produced by the presence of the attached magnetized label particles...” (column 4, lines 23-33). Thus, the magnetizable particles discussed by Baselt are attached to the magnetic field sensors by the “binding molecules capable of undergoing a selective binding interaction” and not by means of the magnetic field.

Baselt does not suggest that the magnetic field may be used to attract the particles to the support. In fact, Baselt discusses the use of a magnetic field to repel the labeled molecules (“a magnetic device, preferably an electromagnet, is used to remove non-specifically adhering particles” column 7, lines 6-8).

Baselt also fails to discuss hybridization rate, and fails to discuss increasing the hybridization rate. In particular, Baselt does not discuss the use of paramagnetic particles to increase the hybridization rate between target molecules and molecules on a substrate surface.

Baselt lacks at least these steps of the claimed methods. Failing to disclose attraction of molecules to a solid support by activation of a magnetic field, and failing to disclose increasing hybridization rate over the hybridization rate found in the absence of a magnetic field, Baselt fails to anticipate the pending claims.

Accordingly, applicants respectfully submit that the rejections to claims 1-3, 6, 7, 9-11, 13 and 14 under 35 U.S.C. § 102(e) are overcome.

The Rejections of Claims 4, 8, 12, and 16 under 35 U.S.C. § 103(a)

Claims 4, 8, 12, and 16 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Baselt in view of Kausch (U.S. Patent 5,665,582).

In order to establish a prima facie case of obviousness, there must be 1) some suggestion or motivation in the art or in the knowledge generally available to one of ordinary skill in the art, to modify or to combine the reference teachings; 2) there must be a reasonable expectation of success; and 3) the prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art, and not based on the applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Baselt is presented by the Examiner as discussed above with respect to the rejections of claims 1-3, 6, 7, 9-11, 13 and 14. Kausch is presented by the Examiner as supplying the missing teaching of a paramagnetic label particle having a diameter of 1 to 10 nm. However, as discussed above, Baselt lacks at least the steps of attracting a particle to a support by activating a magnetic field effective to induce rapid migration, and of hybridizing at a hybridization rate greater than the hybridization rate in the absence of the attracting by the magnetic field. Kausch also fails to supply at least these teachings.

Moreover, neither cited reference suggests these missing teachings; and, lacking such suggestion, neither cited reference provides any motivation to combine the references in order to provide the missing teachings.

Accordingly, the cited references lacking at least these elements of the claimed invention, applicants respectfully submit that the rejections to claims 4, 8, 12, and 16 under 35 U.S.C. § 103(a) are overcome.

The Rejections of Claims 5 and 13 under 35 U.S.C. § 103(a)

Claims 5 and 13 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Baselt in view of Roelant (U.S. Patent 6,001,573). Baselt is presented by the Examiner as discussed above. Roelant is presented by the Examiner as supplying the missing teaching of porphyrin paramagnetic labels.

However, as discussed above, Baselt lacks at least the steps of attracting a particle to a support by activating a magnetic field effective to induce rapid migration, and of hybridizing at a hybridization rate greater than the hybridization rate in the absence of the attracting by the magnetic field. Roelant also fails to supply such teachings, and fails to suggest combining Roelant with Baselt in order to provide the missing teachings.

Accordingly, the cited references lacking at least these elements of the claimed invention, applicants respectfully submit that the rejections to claims 5 and 13 under 35 U.S.C. § 103(a) are overcome.

The Rejections of Claims 1, 2, 4, 6-10, 12 and 14-16 under 35 U.S.C. § 103(a)

Claims 1, 2, 4, 6-10, 12, and 14-16 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Kausch. Kausch is presented by the Examiner as discussing “a method of nucleic acid hybridization comprising attaching nucleic acid target molecules to a solid support; labeling nucleic acid target molecules of known sequence with paramagnetic labels; contacting the support with the labeled nucleic acid molecules of known sequence; washing the support to remove any unbound on non-specifically bound molecules; and detecting the hybridized target nucleic acid molecules, wherein the attracting (i.e. binding) is via a magnetic field (i.e. magnetic means) (column 5, lines 50-51.”

Applicants respectfully submit that attracting is not the same as binding, and thus do not agree with the Examiner’s interpretation of Kausch. Moreover, claims 1, 2, 4, 6-10, 12, and 14-16 require elements not present or suggested by Kausch. For example, claims 1, 2, 4, 6-10, 12, and 14-16 recite “attracting said labeled nucleic acid target molecules to the solid support by activating a magnetic field effective to induce rapid migration of said labeled nucleic acid target molecules” and “hybridizing the labeled nucleic acid target molecules with their complementary pairs at a hybridization rate greater than the hybridization rate in the absence of said attracting by said magnetic field.” Kausch nowhere discusses or suggests activating a magnetic field to induce rapid migration of labeled nucleic acid target molecules, nor does Kausch discuss or suggest hybridization rate that is greater than the hybridization rate in the absence of the attraction by the magnetic field.

Thus, applicants respectfully submit that Kausch lacks at least these steps, fails to suggest at least these steps, and so does not make the pending claims obvious. Accordingly, the cited references lacking at least these elements of the claimed invention, applicants respectfully submit that the rejections to claims 1, 2, 4, 6-10, 12, and 14-16 under 35 U.S.C. § 103(a) are overcome.

Conclusions


Applicants respectfully submit that all rejections and objections are overcome, and believe all claims to be in condition for allowance. Reconsideration and allowance of all pending claims is respectfully requested. Early notification of the allowance of the claims is respectfully requested.

The Commissioner is authorized to charge any fees, including any fees for extension of time, or credit overpayment to Deposit Account No. 08-1641 (Attorney Docket No.: 25527-0003C1).

Sincerely,

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